ROLE OF COMPUTERIZED TOMOGRAPHY GUIDED
STEREOTACTIC SURGERY IN THE MANAGEMENT
OF INTRACRANIAL TUBERCULOMAS

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SUMMARY

In 7 patients computerized tomography guided stereotactic technique was used in
the management of intracranial tuberculomas. Four patients had a definite histological
diagnosis of a tuberculoma, 2 showed chronic inflammation and gliosis, in 1 aspiration
of pus showed acid fast bacilli. There was temporary increase in weakness in 1 case.
There was no procedure related mortality. Computerized tomography guided stereotactic
biopsy helps in management of intracranial tuberculomas by confirming diagnosis
histologically which can then be treated medically. It avoids empirical treatment of
intracranial lesions and avoids complications associated with excision.

INTRODUCTION

In developing countries intracranial tuberculomas are an important differential
diagnosis of intracranial masses and incidence of 20% of all intracranial tumours has
been reported in India. Tuberculomas which were rare in Western countries are
now on the rise due to tuberculous infection in patients with acquired immunodeficiency
syndrome and immigrants from developing countries. On the basis of computerized
tomography (CT) or magnetic resonance imaging (MRI) appearance diagnosis of
intracranial tuberculoma without evidence of active disease can be 80% false-positive.

CT guided stereotactic surgery enables the differentiation of tuberculomas from
other brain lesions by histological evidence. This study presents the benefits with risk of
CT guided stereotactic surgery in the management of intracranial tuberculomas.

MATERIAL AND METHODS

From November 1994 to May 1996, out of 47 patients on whom CT guided
stereotactic surgery was performed in our department, the diagnosis of tuberculomas
was made in 7 patients. The age range was from 15 to 70 years. Stereotactic surgery
was performed using the Leksell stereotactic frame compatible with Somatome DR CT
scanner, and the technique has been previously described in detail.

The indications for CT guided stereotactic surgery were solitary deep seated
lesion in 4 patients, 2 multiple lesions and 1 cystic tuberculous mass.

Patients in whom tuberculoma was confirmed were treated with four
anti-tuberculous (ATT) drugs. Two patients were given short course of steroids to
control cerebral edema. Follow up CT scans were performed to monitor the response to
therapy.

RESULT

The symptoms at presentation are shown in Table-I. Location and number of
masses are shown in Table-II. The pathological findings in 4 solid lesions were
tuberculoma, 2 diagnosis were chronic inflammation with gliosis and in 1 aspiration
TABLE - I
CLINICAL FEATURES

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Seizure</td>
<td>3</td>
<td>43</td>
</tr>
<tr>
<td>Hemiplegia</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Vomiting</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Visual</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>

of pus showed acid fast bacilli. The tissue obtained in CT guided stereotactic biopsy was diagnostic in all cases. No patient required a further surgical procedure.

One patient had an increase in weakness which resolved with steroid therapy. There was no CT guided stereotactic procedure related mortality. With a four drug regimen and regular CT monitoring showed shrinkage of tuberculoma in 2 weeks to 4 months. Fig-1a,b and Fig-2a,b Anti tuberculous treated.

DISCUSSION

Tuberculoma are chronic granulomatous lesions which originate as foci of tuberculous infection within the brain by haematogenous spread from other parts of the body. These lesions may be solitary or multiple. CT and MRI are performed for diagnosis. Both these imaging modalities are very sensitive in detecting intracranial tuberculomas but have a very low specificity. Diagnosis based on CT and MRI are at best presumptive. Practice of empiric antituberculous treatment based on imaging is not acceptable in this day and age.

With the availability of CT guided Stereotactic techniques biopsy of intracranial lesions for verification of histology is mandatory before initiating ATT. This also prevents delay in definitive therapy for a patient with a lesion other than tuberculoma who has started ATT, which has many side effects, hepatotoxicity being the commonest. Patients on empiric ATT need repeated CT

Fig. 1: (a) Contrast enhanced CT shows target localisation of left parietal mass, biopsy revealed tuberculoma.
(b) Contrast enhanced CT after 3 months of ATT shows marked reduction in size of lesion.
examinations for monitoring which is also expensive. CT guided stereotactic surgery is reliable with low morbidity and mortality associated with this procedure.\textsuperscript{9,10} It is alternative to open surgery as medical treatment has been shown to be superior to gross surgical excision of tuberculoma.\textsuperscript{11}

In conclusion, information from a CT guided Stereotactic biopsy about histological diagnosis and initiation of antituberculous therapy is probably the management of choice for intracranial tuberculomas.

**REFERENCES**


